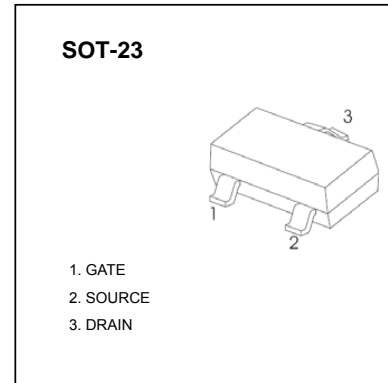


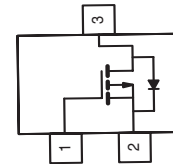
MOSFET PRODUCT SUMMARY

V _{DS} (V)	R _{DS(on)} (mΩ)	I _D (A) ^a	Q _g (Typ.)
- 12	35 at V _{GS} = - 4.5 V	- 5.1	9 nC
	45 at V _{GS} = - 2.5 V	- 4.5	
	59 at V _{GS} = - 1.8 V	- 3.9	



APPLICATIONS

- Load Switch
- PA Switch



ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	- 12	V	
Gate-Source Voltage	V _{GS}	± 8		
Continuous Drain Current (T _J = 150 °C)	I _D	T _C = 25 °C	- 7.1	A
		T _C = 70 °C	- 5.7	
		T _A = 25 °C	- 5.1 ^{b, c}	
		T _A = 70 °C	- 4.0 ^{b, c}	
Pulsed Drain Current	I _{DM}	- 20		
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C	- 1.0	
		T _A = 25 °C	- 0.63 ^{b, c}	
Maximum Power Dissipation	P _D	T _C = 25 °C	2.5	W
		T _C = 70 °C	1.6	
		T _A = 25 °C	1.25 ^{b, c}	
		T _A = 70 °C	0.8 ^{b, c}	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 150	°C	

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^{b, d}	R _{thJA}	75	100	°C/W
Maximum Junction-to-Foot (Drain)	R _{thJF}	40	50	

Notes:

- a. Based on T_C = 25 °C.
- b. Surface Mounted on 1" x 1" FR4 board.
- c. t = 5 s.
- d. Maximum under Steady State conditions is 166 °C/W.

MOSFET SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted

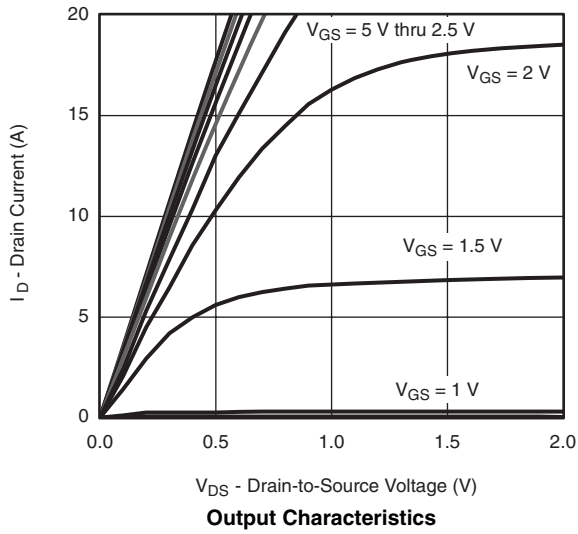
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{DS} = 0\text{ V}, I_D = -250\text{ }\mu\text{A}$	- 12			V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	$I_D = -250\text{ }\mu\text{A}$		- 13		mV/°C
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$			2.6		
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$	- 0.4		- 1	V
Gate-Source Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 8\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -12\text{ V}, V_{GS} = 0\text{ V}$			- 1	μA
		$V_{DS} = -12\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$			- 10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \leq -5\text{ V}, V_{GS} = -4.5\text{ V}$	- 20			A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = -4.5\text{ V}, I_D = -5.1\text{ A}$		28.5	35	m Ω
		$V_{GS} = -2.5\text{ V}, I_D = -4.5\text{ A}$		36	45	
		$V_{GS} = -1.8\text{ V}, I_D = -2.0\text{ A}$		46	59	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -5\text{ V}, I_D = -5.3\text{ A}$		18.5		S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{DS} = -6\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		1225		μF
Output Capacitance	C_{oss}			315		
Reverse Transfer Capacitance	C_{rss}			260		
Total Gate Charge	Q_g	$V_{DS} = -6\text{ V}, V_{GS} = -4.5\text{ V}, I_D = -5.1\text{ A}$		15	25	nC
				9	15	
Gate-Source Charge	Q_{gs}	$V_{DS} = -6\text{ V}, V_{GS} = -2.5\text{ V}, I_D = -5.1\text{ A}$		1.9		
Gate-Drain Charge	Q_{gd}			3.8		
Gate Resistance	R_g	$f = 1\text{ MHz}$		4.0		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -6\text{ V}, R_L = 6\text{ }\Omega$ $I_D = -1\text{ A}, V_{GEN} = -4.5\text{ V}, R_G = 1\text{ }\Omega$		13	20	ns
Rise Time	t_r			35	60	
Turn-Off Delay Time	$t_{d(off)}$			45	70	
Fall Time	t_f			12	20	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	$T_C = 25\text{ }^\circ\text{C}$			- 1.0	A
Pulse Diode Forward Current ^a	I_{SM}				- 20	
Body Diode Voltage	V_{SD}	$I_S = -1.0\text{ A}$		- 0.7	- 1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = -1.0\text{ A}, dl/dt = 100\text{ A}/\mu\text{s}, T_J = 25\text{ }^\circ\text{C}$		32	50	ns
Body Diode Reverse Recovery Charge	Q_{rr}			20	40	nC
Reverse Recovery Fall Time	t_a			16		ns
Reverse Recovery Rise Time	t_b			16		

Notes:

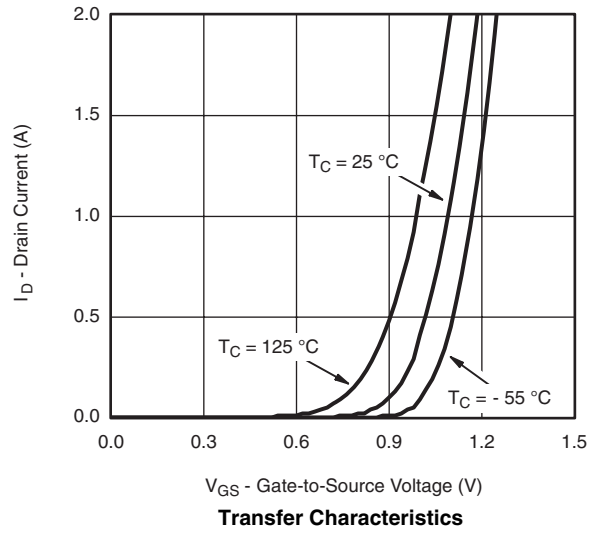
 a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

b. Guaranteed by design, not subject to production testing.

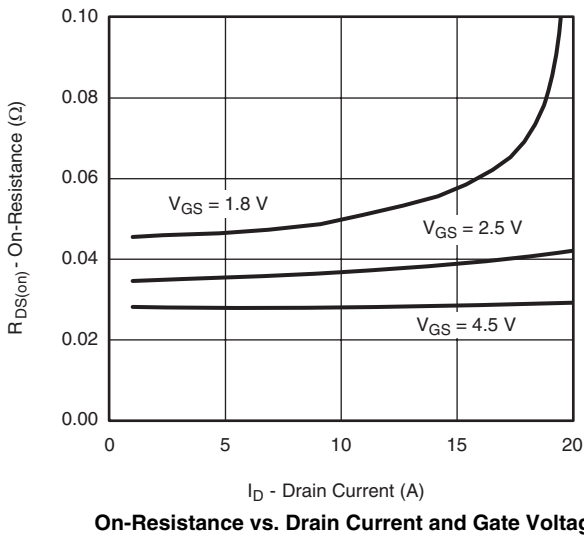
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



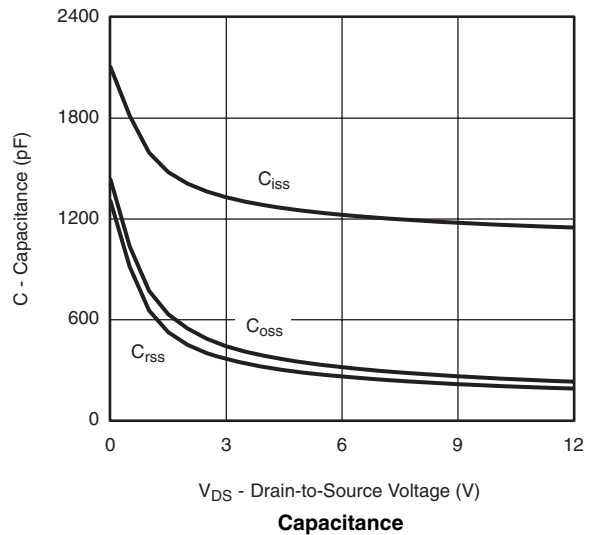
Output Characteristics



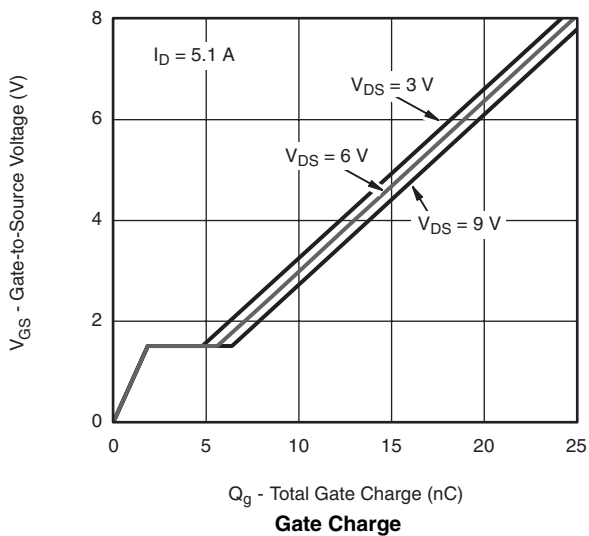
Transfer Characteristics



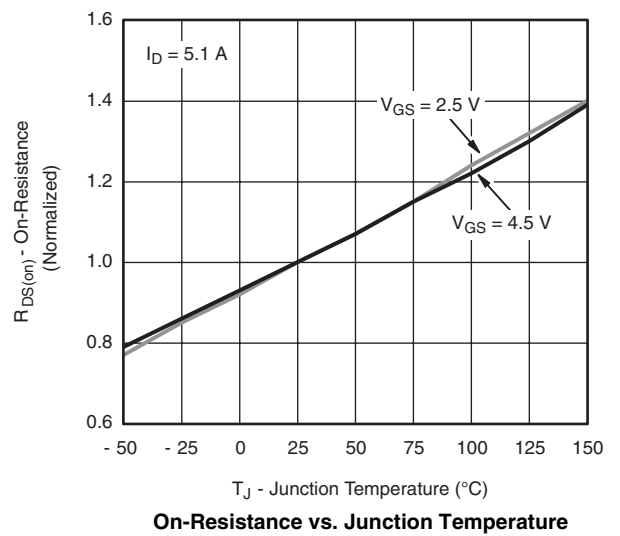
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

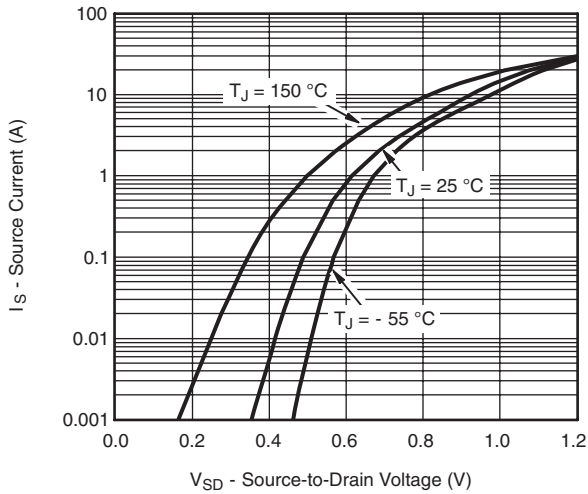


Gate Charge

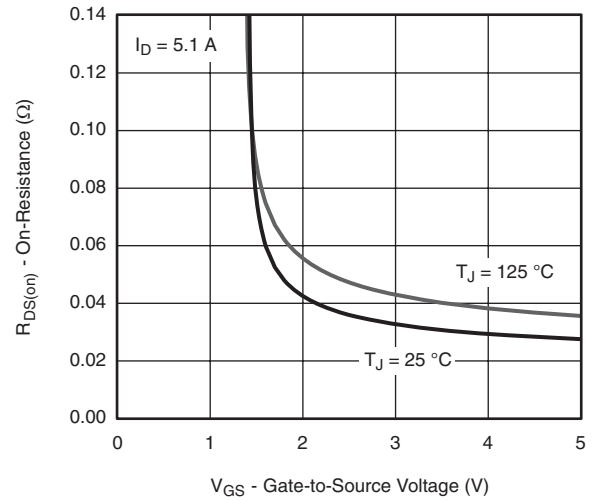


On-Resistance vs. Junction Temperature

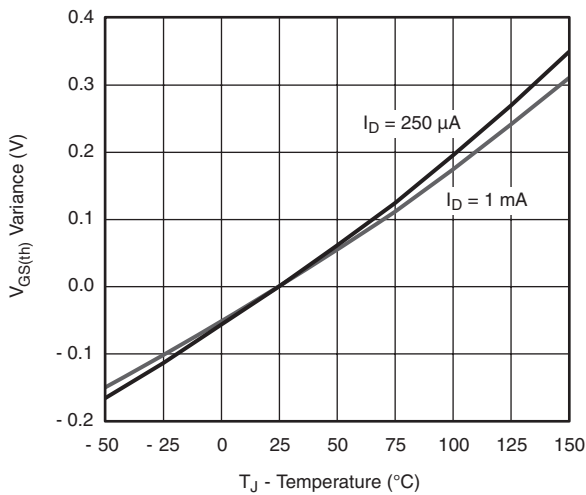
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



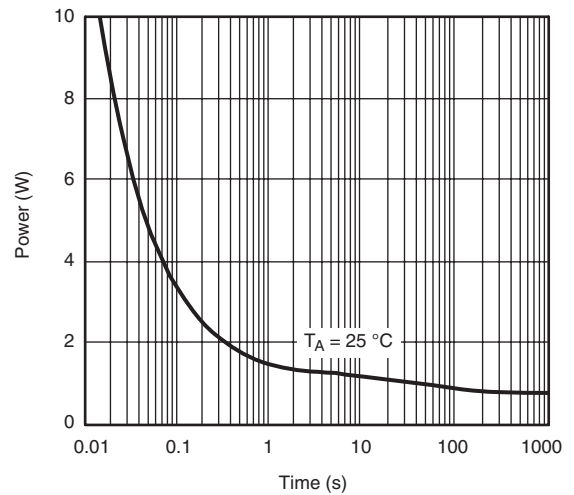
Source-Drain Diode Forward Voltage



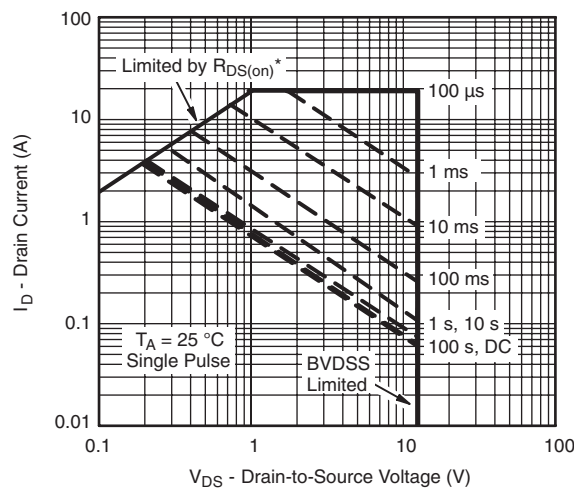
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



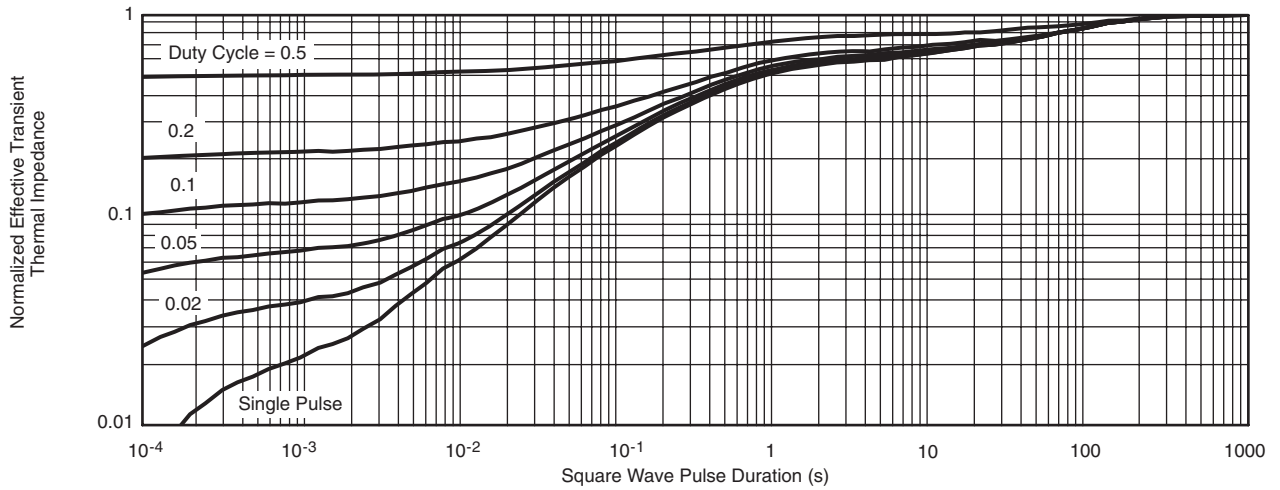
Single Pulse Power



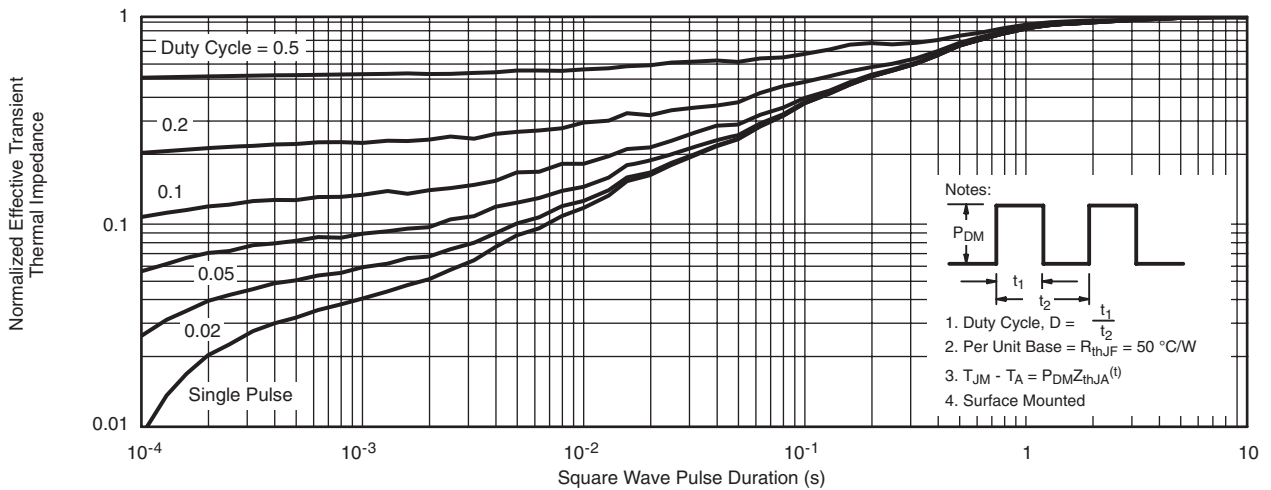
* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

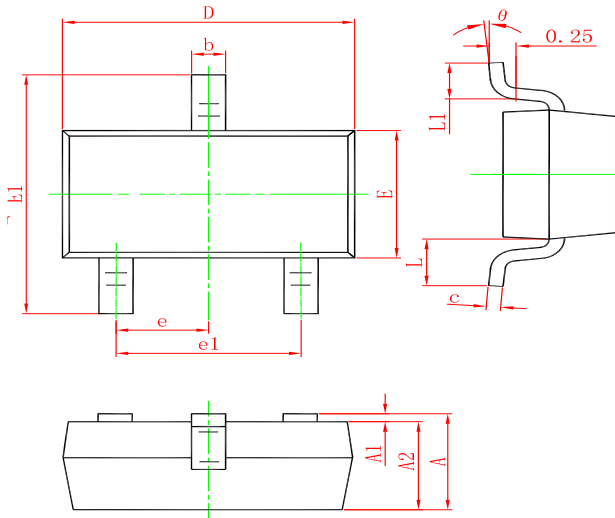


Normalized Thermal Transient Impedance, Junction-to-Ambient



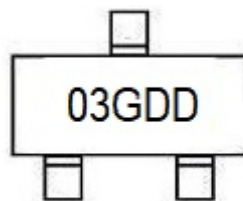
Normalized Thermal Transient Impedance, Junction-to-Foot

SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW SI2333CDS	SOT-23	3000	Tape and reel